



## SEQUENCE LISTING

<110> DIVERSA CORPORATION  
Murphy, Dennis  
Ried, John

<120> ENZYMES HAVING ALPHA-GALACTOSIDASE ACTIVITY AND METHODS OF USE THEREOF

<130> DIVER1120-4

<140> 09/886,400  
<141> 2001-06-20

<150> 09/619,032  
<151> 2000-07-19

<150> 09/407,806  
<151> 1999-09-20

<150> 08/613,220  
<151> 1996-03-08

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1	5	10	15	
aag agc gaa atc cca aag gtc ata gag aag gca tac atc cca gtc atc				96
Lys Ser Glu Ile Pro Lys Val Ile Glu Lys Ala Tyr Ile Pro Val Ile				
20	25	30		
gag aca ctg att aaa gaa gaa att cct ttt ggg ctc aac ata acg ggc				144
Glu Thr Leu Ile Lys Glu Glu Ile Pro Phe Gly Leu Asn Ile Thr Gly				
35	40	45		
tat acc tta aag ttc ctc ccg aag gat att ata gac ctc gtt aaa ggg				192
Tyr Thr Leu Lys Phe Leu Pro Lys Asp Ile Ile Asp Leu Val Lys Gly				
50	55	60		
ggc atc gcg agt gac ctg ata gag ata atc gga acg agc tac acg cac				240
Gly Ile Ala Ser Asp Leu Ile Glu Ile Gly Thr Ser Tyr Thr His				
65	70	75	80	
gca ata ctc ccc ctc ctc ccg ctt agc aga gta gaa gca caa gtt cag				288
Ala Ile Leu Pro Leu Leu Pro Leu Ser Arg Val Glu Ala Gln Val Gln				
85	90	95		
aga gat agg gaa gtt aag gaa gag ctc ttc gag ctt tct cca aag gga				336
Arg Asp Arg Glu Val Lys Glu Glu Leu Phe Glu Leu Ser Pro Lys Gly				
100	105	110		
tcc tgg ctg cca gag ctc gcc tat gac ccg ata atc cct gcc ata ctg				384
Phe Trp Leu Pro Glu Leu Ala Tyr Asp Pro Ile Ile Pro Ala Ile Leu				
115	120	125		
aag gac aac ggt tat gag tat cta ttc gcc gac ggg gag gcg atg ctt				432
Lys Asp Asn Gly Tyr Glu Tyr Leu Phe Ala Asp Gly Glu Ala Met Leu				
130	135	140		
tcc tca gct cat ctc aac tcg gcg ata aag cca att aaa ccg ctc tat				480
Phe Ser Ala His Leu Asn Ser Ala Ile Lys Pro Ile Lys Pro Leu Tyr				
145	150	155	160	
cca cac ctt ata aag gcc caa agg gaa aag cgc ttt agg tac atc agc				528
Pro His Leu Ile Lys Ala Gln Arg Glu Lys Arg Phe Arg Tyr Ile Ser				
165	170	175		
tat ctc ctt ggt ctc agg gag ctt agg aag gcg ata aag ctc gtt ttt				576
Tyr Leu Leu Gly Leu Arg Glu Leu Arg Lys Ala Ile Lys Leu Val Phe				
180	185	190		
gaa ggt aag gta acg cta aag gca gtc aaa gac atc gaa gcc gta ccc				624
Glu Gly Lys Val Thr Leu Lys Ala Val Lys Asp Ile Glu Ala Val Pro				
195	200	205		
gtt tgg gtg gcc gtg aac acg gct gta atg ctc ggc atc gga agg ctt				672
Val Trp Val Ala Val Asn Thr Ala Val Met Leu Gly Ile Gly Arg Leu				
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cct ctt atg aat cct aag aaa gtg gcg agc tgg ata gag gac aag gac				720
Pro Leu Met Asn Pro Lys Lys Val Ala Ser Trp Ile Glu Asp Lys Asp				
225	230	235	240	
aac att ctt cta tac ggc acc gat ata gag ttc att ggc tat agg gac				768
Asn Ile Leu Leu Tyr Gly Thr Asp Ile Glu Phe Ile Gly Tyr Arg Asp				

245

250

255

att gca ggc tac aga atg agt gtt gag gga tta tta gag gtt ata gac Ile Ala Gly Tyr Arg Met Ser Val Glu Gly Leu Leu Glu Val Ile Asp 260	265	270	816
gag ctc aac tcg gaa ctg tgc ctt ccc tca gag ctg aag cac agt gga Glu Leu Asn Ser Glu Leu Cys Leu Pro Ser Glu Leu Lys His Ser Gly 275	280	285	864
agg gag ctc tac tta cgg act tcg agt tgg gca cca gat aag agc ttg Arg Glu Leu Tyr Leu Arg Thr Ser Ser Trp Ala Pro Asp Lys Ser Leu 290	295	300	912
agg ata tgg aga gag gac gaa ggg aac gca aga ctt aat atg ctg tcc Arg Ile Trp Arg Glu Asp Glu Gly Asn Ala Arg Leu Asn Met Leu Ser 305	310	315	960
tac aat atg agg ggc gaa ctc gcc ctt tta gcc gag aac agc gat gca Tyr Asn Met Arg Gly Glu Leu Ala Leu Ala Glu Asn Ser Asp Ala 325	330	335	1008
agg gga tgg gag ccc ctc cct gag agg agg ctg gat gcc ttc cgg gcg Arg Gly Trp Glu Pro Leu Pro Glu Arg Arg Leu Asp Ala Phe Arg Ala 340	345	350	1056
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<213> Thermococcus alcaliphilus

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Glu Thr Leu Ile Lys Glu Glu Ile Pro Phe Gly Leu Asn Ile Thr Gly			
35	40	45	
Tyr Thr Leu Lys Phe Leu Pro Lys Asp Ile Ile Asp Leu Val Lys Gly			
50	55	60	
Gly Ile Ala Ser Asp Leu Ile Glu Ile Ile Gly Thr Ser Tyr Thr His			
65	70	75	80
Ala Ile Leu Pro Leu Leu Pro Leu Ser Arg Val Glu Ala Gln Val Gln			
85	90	95	
Arg Asp Arg Glu Val Lys Glu Glu Leu Phe Glu Leu Ser Pro Lys Gly			
100	105	110	
Phe Trp Leu Pro Glu Leu Ala Tyr Asp Pro Ile Ile Pro Ala Ile Leu			
115	120	125	
Lys Asp Asn Gly Tyr Glu Tyr Leu Phe Ala Asp Gly Glu Ala Met Leu			
130	135	140	
Phe Ser Ala His Leu Asn Ser Ala Ile Lys Pro Ile Lys Pro Leu Tyr			
145	150	155	160
Pro His Leu Ile Lys Ala Gln Arg Glu Lys Arg Phe Arg Tyr Ile Ser			
165	170	175	
Tyr Leu Leu Gly Leu Arg Glu Leu Arg Lys Ala Ile Lys Leu Val Phe			
180	185	190	

Glu Gly Lys Val Thr Leu Lys Ala Val Lys Asp Ile Glu Ala Val Pro  
195 200 205  
Val Trp Val Ala Val Asn Thr Ala Val Met Leu Gly Ile Gly Arg Leu  
210 215 220  
Pro Leu Met Asn Pro Lys Lys Val Ala Ser Trp Ile Glu Asp Lys Asp  
225 230 235 240  
Asn Ile Leu Leu Tyr Gly Thr Asp Ile Glu Phe Ile Gly Tyr Arg Asp  
245 250 255  
Ile Ala Gly Tyr Arg Met Ser Val Glu Gly Leu Leu Glu Val Ile Asp  
260 265 270  
Glu Leu Asn Ser Glu Leu Cys Leu Pro Ser Glu Leu Lys His Ser Gly  
275 280 285  
Arg Glu Leu Tyr Leu Arg Thr Ser Ser Trp Ala Pro Asp Lys Ser Leu  
290 295 300  
Arg Ile Trp Arg Glu Asp Glu Gly Asn Ala Arg Leu Asn Met Leu Ser  
305 310 315 320  
Tyr Asn Met Arg Gly Glu Leu Ala Leu Ala Glu Asn Ser Asp Ala  
325 330 335  
Arg Gly Trp Glu Pro Leu Pro Glu Arg Arg Leu Asp Ala Phe Arg Ala  
340 345 350  
Ile Tyr Asn Asp Trp Arg Gly Glu Asn Gly Glu Pro  
355 360